SAMSUNG SDI

# MATERIAL SAFETY DATA SHEET

## 1. PRODUCT / COMPANY IDENTIFICATION

**PRODUCT IDENTIFICATION**
**Samsung SDI Lithium-Ion Battery**
**Samsung SDI AS10B6E**

| Item | Nominal Value | Remark |
|---|---|---|
| Wh-capacity | 67 Wh | < 100Wh(Pack) |

**MANUFACTURER**

Samsung SDI Co., Ltd
508 Sungsung-Dong Cheonan-Shi
Chungcheongnam-Do, Korea
Tel: 82-70-7125-1837 Emergency Contact(Chemtrec) 1-800-424-9300: US and Canada
1-703-527-3887: International

## 2. COMPOSITION INFORMATION

| INGREDIENTS | % | CAS NUMBER |
|---|---|---|
| Aluminum Foil | 2-10 | 7429-90-5 |
| Metal Oxide (propietary) | 20-50 | Confidential |
| Polyvinylidene Fluoride (PVDF) | <5 | 24937-79-9 |
| Styrene Butadiene Rubber(SBR) | <5 | 9003-55-8 |
| Copper Foil | 2-10 | 7440-50-8 |
| Carbon (proprietary) | 10-30 | 7440-44-0 |
| Electrolyte (proprietary) | 10-20 | Confidential |
| Aluminum and inert materials | Remainder | N/A |

## 3. HAZARDS IDENTIFICATION

PRIMARY ROUTES OF ENTRY

Skin contact, Skin absorption, Eye contact, Inhalation, and Ingestion : NO

SYMPTOMS OF EXPOSURE

Skin contact, Skin absorption, Eye contact, Inhalation

→ No effect under routine handling and use.

REPORTED AS CARCINOGEN

NOT APPLICABLE

## 4. FIRST AID MEASURES

INHALATION, EYE CONTACT, and SKIN CONTACT: Not a health hazard.

INGESTION
If swallowed, obtain medical attention immediately.

If exposure to internal materials within cell due to damaged outer casing, the following actions are recommended.

INHALATION
Leave area immediately and seek medical attention.

EYE CONTACT
Rinse eyes with water for 15 minutes and seek medical attention.

SKIN CONTACT
Wash area thoroughly with soap and water and seek medical attention.

INGESTION
Drink milk/water and induce vomiting; seek medical attention.

## 5. FIRE FIGHTING MEASURES

GENERAL HAZARD
Cell is not flammable but internal organic material will burn if the cell is incinerated. Combustion products include, but are not limited to hydrogen fluoride, carbon monoxide and carbon dioxide.

EXTINGUSHING MEDIA
Use extinguishing media suitable for the materials that are burning.

SPECIAL FIREFIGHTING INSTRUCTIONS
If possible, remove cell(s) from fire fighting area. If heated above 125°C, cell(s) can explode/vent.

FIREFIGHTING EQUIPMENT
Use NIOSH/MSHA approved full-face self-contained breathing apparatus (SCBA) with full protective gear.

## 6. ACCIDENTAL RELEASE MEASURES

ON LAND
Place material into suitable containers and call local fire/police department.

IN WATER

If possible, remove from water and call local fire/police department.

## 7. HANDLING AND STORAGE

HANDLING

No special protective clothing required for handling individual cells.

STORAGE

Store in a cool, dry place.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS

Keep away from heat and open flame. Store in a cool dry place.

PERSONAL PROTECTION

| | |
|---|---|
| Respirator: | Not required during normal operations. SCBA required in the event of a fire. |
| Eye/face protection: | Not required beyond safety practices of employer. |
| Gloves: | Not required for handling of cells. |
| Foot protection: | Steel toed shoes recommended for large container handling. |

## 9. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|---|---|---|---|
| **State** | Solid | **Odor** | N/A |
| **PH** | N/A | **Vapor pressure** | N/A |
| **Vapor density** | N/A | **Boiling point** | N/A |
| **Solubility in water** | Insoluble | **Specific gravity** | N/A |
| **Density** | N/A | | |

## 10. STABILITY AND REACTIVITY

REACTIVITY

None

INCOMPATIBILITIES

None (during normal operation). Avoid exposure to heat, open flame, and corrosives.

HAZARDOUS DECOMPOSITION PRODUCTS

None (during normal operating conditions). If cells are opened, hydrogen fluoride and carbon monoxide may be released.

CONDITIONS TO AVOID

Avoid exposure to heat and open flame. Do not puncture, crush or incinerate.

## 11. TOXICOLOGICAL INFORMATION

This product does not elicit toxicological properties during routine handling and use.

| | | | |
|---|---|---|---|
| Sensitization: NO | Teratogenicity: NO | Reproductive toxicity: NO | Acute toxicity: NO |

This product does not contain any kinds of the following substances and halogen-type flame retardants including Chlorine and Bromide type harmful flame retardants which are listed in Appendix of TCO documents and relevant international ECO requirements:

| | |
|---|---|
| Polybromated Biphenyls | (PBB) |
| Polybromated Biphenyl Ethers | (PBBE) |
| Polybromated Biphenyl Oxides | (PBBO) |
| Polybromated Diphenylethers | (PBDE) |
| Polychlorinated Biphenyl | (PCB) |
| Polychloronated Diphenylethers | (PCDE) |
| Tetrabromphisphenol A | (TBBPA) |
| Asbestos, Antimonytrioxide, Dioxine | |

None of the following substances will be exposed, leaked, or emitted during transportation, storage or any operation and any temperature condition:

Chlorinated Fluorohydrocarbon (FCKW)
Acrylonitride
Styrol
Phenol
Benzol
Mercury of greater than 0.0001 wt% for alkaline battery
Mercury of greater than 0.0005 wt% for other battery
Lithium content of greater than 0.5g/cell, 1.5g/battery
Cadmium, lead, and other harmful heavy metal

This product does not contain mercury, cadmium and lithium-metal.

Mercury content: N/A
Lithium-metal: N/A
Cadmium content: N/A

If the cells are opened through misuse or damage, discard immediately. Internal components of cell are irritants and sensitizers.

## 12. ECOLOGICAL INFORMATION

Some materials within the cell are bioaccumulative. Under normal conditions, these materials are contained and pose no risk to persons or the surrounding environment.

## 13. DISPOSAL CONRIDERATION

CALIFORNIA REGULATED DEBRIS

RCRA Waste Code: Non-regulated

Dispose of according to all federal, state, and local regulations.

## 14. REGULATORY INFORMATION

OSHA hazard communication standard (29 CFR 1910.1200)

___Hazardous ✔ Non-hazardous

## 15. TRANSPORT INFORMATION

The rechargeable Lithium-Ion battery pack as stated in Appendix are made in compliance to the requirements stated in the latest edition of the IATA Dangerous Goods Regulations Packing Instruction 965 Part 1 such that they can be transported as a NOT RESTRICTED (non-hazardous/non-dangerous) goods. However, if those lithium-ion battery packs are pack with or contained in an equipment, then it is the responsibility of the shipper to ensure that the consignment are packed in compliance to the latest edition of the IATA Dangerous Goods Regulations Part 1 section of either Packing Instruction 966 or 967 in order for that consignment to be declared as NOT RESTRICTED (non-hazardous/non-Dangerous).

With regard to transport, the following regulations are cited and considered:

- The International Civil Aviation Organization (ICAO) Technical Instructions (2009-2010 Edition),
- The International Air Transport Association (IATA) Dangerous Goods Regulations (50th Edition)
- The International Maritime Dangerous Goods (IMDG) Code (2008 Edition),
- US Harzardous Materials Regulations 49 CFR(Code of Federal Regulations) Sections 173-185 Lithium batterie and cells,

- The UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria 38.3 Lithium batteries, 4th revised edition(UN3480)

Our products are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation according to all the applicable international and national governmental regulations, not limited to the above mentioned. We further certify that the enclosed products have been tested and fulfilled the requirements and conditions in accordance with UN Recommendations (T1 – T8) on the Transport of Dangerous Goods Model Regulations and the Manual of Testes and Criteria that can be treated as "Non-Dangerous Goods".

**Test results of the UN Recommendation on the Transport of Dangerous Goods**

| **Manual of Test and Criteria (38.3 Lithium battery)** | | **Test Results** | **Remark** |
|---|---|---|---|
| No | Test item | | |
| T1 | Altitude Simulation | Pass | |
| T2 | Thermal Test | Pass | |
| T3 | Vibration | Pass | |
| T4 | Shock | Pass | |
| T5 | External Short Circuit | Pass | |
| T6 | Impact | Pass | |
| T7 | Overcharge | Pass | For pack only |
| T8 | Forced Discharge | Pass | For cell only |

## 16. OTHER INFORMATION

For further information, please contact SAMSUNG SDI sales representative.